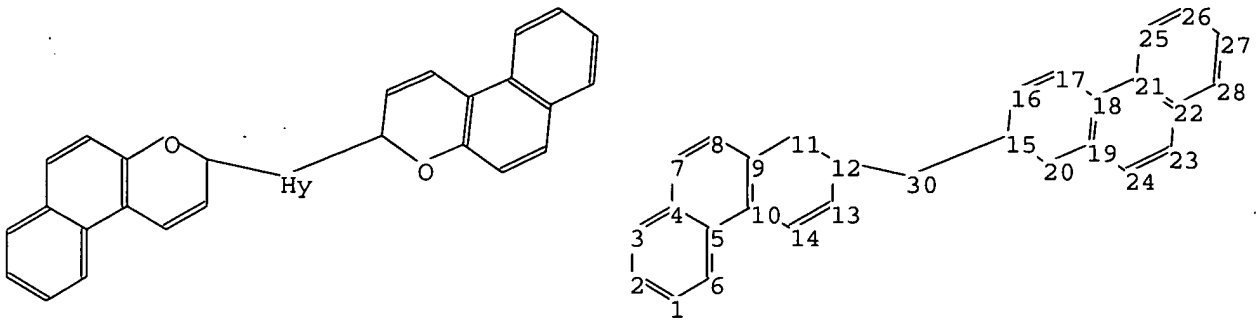


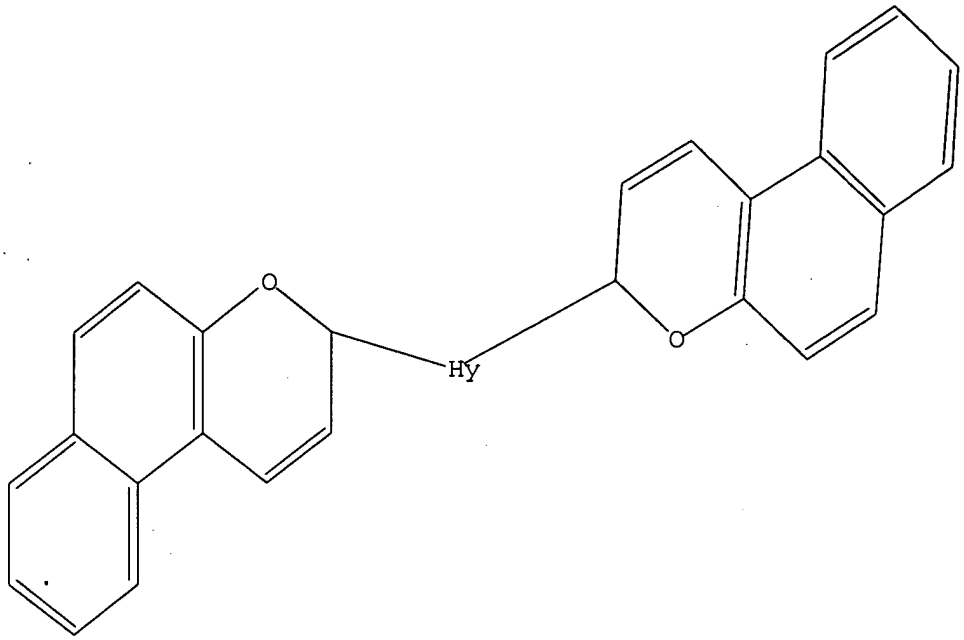
chain nodes :
30
ring nodes :
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25 26 27 28
chain bonds :
12-30 15-30
ring bonds :
1-2 1-6 2-3 3-4 4-5 4-7 5-6 5-10 7-8 8-9 9-10 9-11 10-14 11-12 12-13
13-14 15-20 15-16 16-17 17-18 18-19 18-21 19-20 19-24 21-22 21-25 22-23
22-28 23-24 25-26 26-27 27-28
exact/norm bonds :
9-11 10-14 11-12 12-13 12-30 13-14 15-20 15-16 15-30 16-17 17-18 19-20
normalized bonds :
1-2 1-6 2-3 3-4 4-5 4-7 5-6 5-10 7-8 8-9 9-10 18-19 18-21 19-24 21-22
21-25 22-23 22-28 23-24 25-26 26-27 27-28

G1:O,S

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
20:Atom 21:Atom 22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom
30:Atom

L4 STRUCTURE UPLOADED

=> d
L4 HAS NO ANSWERS
L4 STR



G1 O,S

Structure attributes must be viewed using STN Express query preparation.

```
=> s l4
SAMPLE SEARCH INITIATED 10:06:15 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED -   1216 TO ITERATE

 82.2% PROCESSED    1000 ITERATIONS                                0 ANSWERS
INCOMPLETE SEARCH (SYSTEM LIMIT EXCEEDED)
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS:  ONLINE  **COMPLETE**
                        BATCH   **COMPLETE**
PROJECTED ITERATIONS:        22229 TO    26411
PROJECTED ANSWERS:               0 TO        0

L5            0 SEA SSS SAM L4

=> s l4 full
FULL SEARCH INITIATED 10:06:24 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED -  25054 TO ITERATE

100.0% PROCESSED   25054 ITERATIONS                              0 ANSWERS
SEARCH TIME: 00.00.01

L6            0 SEA SSS FUL L4

=>
Uploading C:\Program Files\Stnexp\Queries\106950622.str
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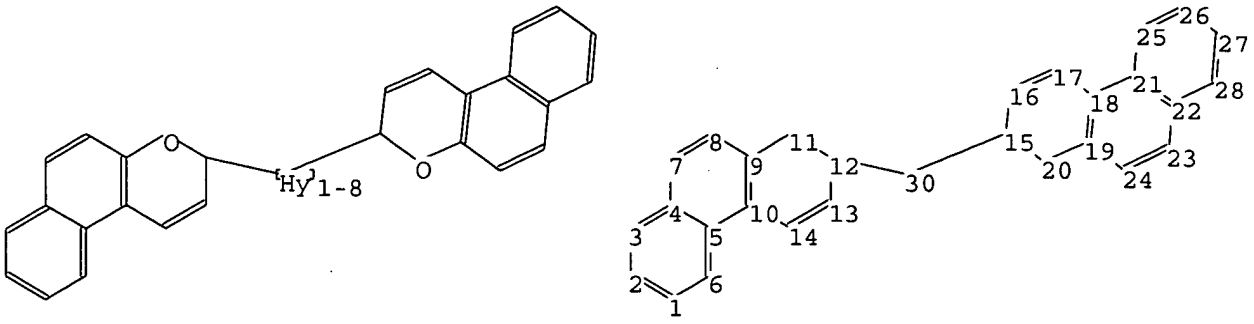


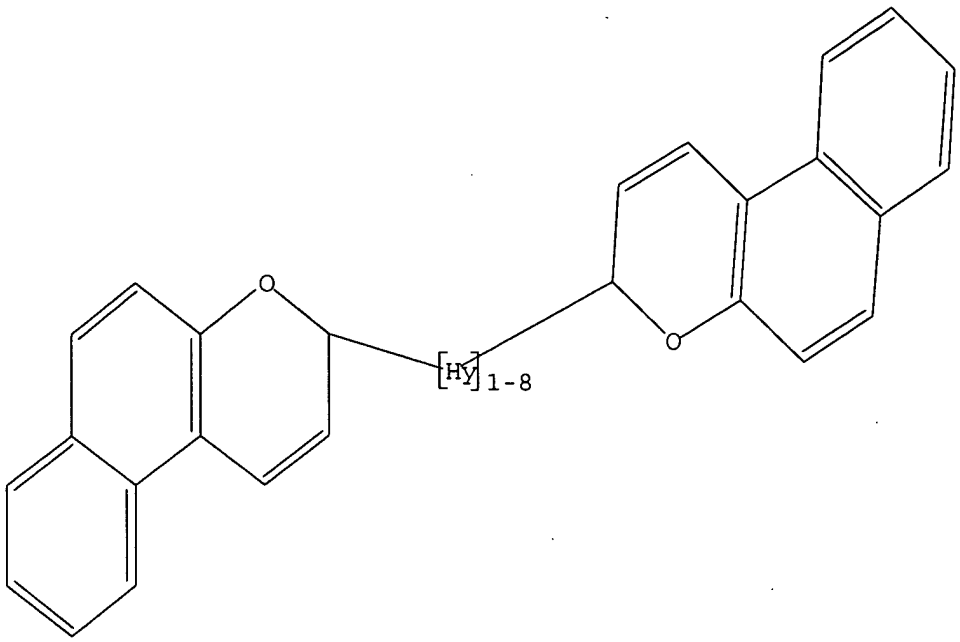
chain nodes :
30
ring nodes :
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25 26 27 28
chain bonds :
12-30 15-30
ring bonds :
1-2 1-6 2-3 3-4 4-5 4-7 5-6 5-10 7-8 8-9 9-10 9-11 10-14 11-12 12-13
13-14 15-20 15-16 16-17 17-18 18-19 18-21 19-20 19-24 21-22 21-25 22-23
22-28 23-24 25-26 26-27 27-28
exact/norm bonds :
9-11 10-14 11-12 12-13 12-30 13-14 15-20 15-16 15-30 16-17 17-18 19-20
normalized bonds :
1-2 1-6 2-3 3-4 4-5 4-7 5-6 5-10 7-8 8-9 9-10 18-19 18-21 19-24 21-22
21-25 22-23 22-28 23-24 25-26 26-27 27-28

G1:O,S

Match level :
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
20:Atom 21:Atom 22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom
30:Atom

L7 STRUCTURE UPLOADED

=> d
L7 HAS NO ANSWERS
L7 STR



G1 O,S

Structure attributes must be viewed using STN Express query preparation.

```
=> s l7
SAMPLE SEARCH INITIATED 10:08:31 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED -   1178 TO ITERATE

 84.9% PROCESSED    1000 ITERATIONS                                0 ANSWERS
INCOMPLETE SEARCH (SYSTEM LIMIT EXCEEDED)
SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS:  ONLINE  **COMPLETE**
                        BATCH   **COMPLETE**
PROJECTED ITERATIONS:        21501 TO    25619
PROJECTED ANSWERS:               0 TO        0

L8             0 SEA SSS SAM L7

=> s l7 full
FULL SEARCH INITIATED 10:09:39 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED -  24194 TO ITERATE

100.0% PROCESSED   24194 ITERATIONS                               8 ANSWERS
SEARCH TIME: 00.00.01

L9             8 SEA SSS FUL L7

=> file caplus
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                 ENTRY    SESSION
FULL ESTIMATED COST                             487.86     488.07
```

FILE 'CAPLUS' ENTERED AT 10:09:49 ON 17 APR 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 17 Apr 2005 VOL 142 ISS 17
FILE LAST UPDATED: 15 Apr 2005 (20050415/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l9
L10 5 L9

=> d ibib abs hitstr tot

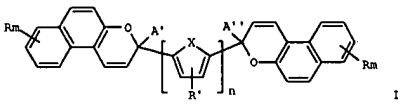
Applicants

L10 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:202636 CAPLUS
DOCUMENT NUMBER: 138:239391
TITLE: Photochromic bis-naphthopyran compounds, their production and their use
INVENTOR(S): Zhao, Weili; Carriera, Erik M.
PATENT ASSIGNEE(S): Johnson & Johnson Vision Care, Inc., USA
SOURCE: PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003020718	A1	20030313	WO 2002-US25669	20020813
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003078441	A1	20030424	US 2001-945897	20010904
US 6747145	B2	20040608		
EP 1423387	A1	20040602	EP 2002-797735	20020813
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
BR 2002012551	A	20041019	BR 2002-12551	20020813
JP 2005508897	T2	20050407	JP 2003-524988	20020813
TW 591021	B	20040611	TW 2002-91119985	20020903
US 2004084660	A1	20040506	US 2003-695062	20031028
PRIORITY APPLN. INFO.:			US 2001-945897 A	20010904
			WO 2002-US25669 W	20020813

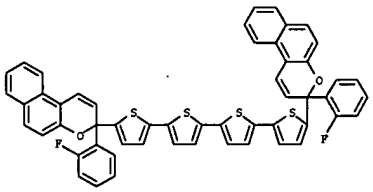
OTHER SOURCE(S): MARPAT 138:239391
GI



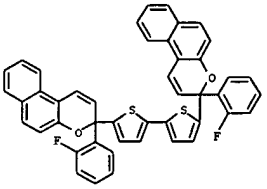
I

AB The invention provides photochromic bis-naphthopyran compds. (I; A', A'' = organic group; R, R' = H, OH, halogen, nitro, cyano, allyl, phenylethynyl, phenylvinyl,other organic group; m = 0-3; n = 1-8) and their production from propargyl alcs. and naphthols. I exhibit a wide range of color, from pink to purple to blue gray, upon activation by a source of UV light and are suitable for use in photochromic ophthalmic lenses with fast response in both color change on activation and return to original color, and good fatigue resistance. In an example, thiophene was acylated with p-methoxybenzoyl chloride to give a ketone which was treated with Na acetylide; the resulting propynol deriv. was cyclized with 2-naphthol followed by dimerization to give pink 5,5'-bis[3-(p-methoxyphenyl)[3H]naphtho[2,1-b]pyran-3-yl]-2,2'-bithiophene.

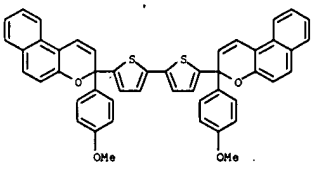
IT **501425-50-9P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(dye; photochromic bis-naphthopyran dyes for lenses)
RN 501425-50-9 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2':5',2'':5'',2'''-quaterthiophene]-5,5'''-diylbis[3-(2-fluorophenyl)- (9CI) (CA INDEX NAME)



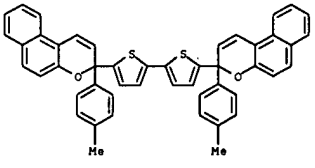
IT **405151-03-3P 501425-46-3P 501425-47-4P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pink dye; production of photochromic bis-naphthopyran dyes for lenses)
RN 405151-03-3 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2'-bithiophene]-5,5'-diylbis[3-(2-fluorophenyl)- (9CI) (CA INDEX NAME)



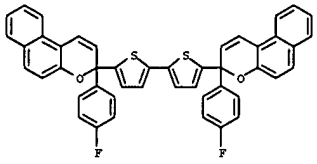
RN 501425-46-3 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2'-bithiophene]-5,5'-diylbis[3-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



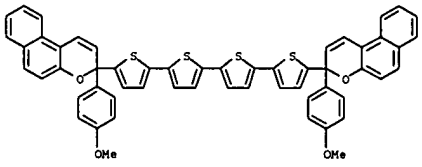
RN 501425-47-4 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2'-bithiophene]-5,5'-diylbis[3-(4-methylphenyl)- (9CI) (CA INDEX NAME)



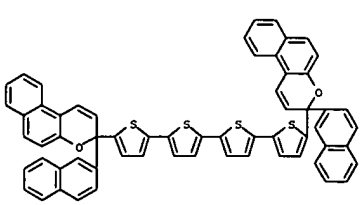
IT **501425-48-5P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(yellow-brown dye; production of photochromic bis-naphthopyran dyes for lenses)
RN 501425-48-5 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2'-bithiophene]-5,5'-diylbis[3-(4-fluorophenyl)- (9CI) (CA INDEX NAME)



IT **402491-87-6P 501425-49-6P**
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(yellow-green dye; production of photochromic bis-naphthopyran dyes for lenses)
RN 402491-87-6 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2':5',2'':5'',2'''-quaterthiophene]-5,5'''-diylbis[3-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)

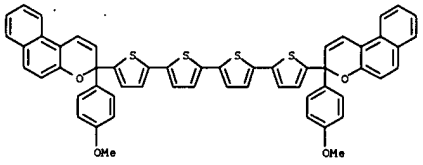


RN 501425-49-6 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2':5',2'':5'',2'''-quaterthiophene]-5,5'''-diylbis[3-(2-naphthalenyl)- (9CI) (CA INDEX NAME)



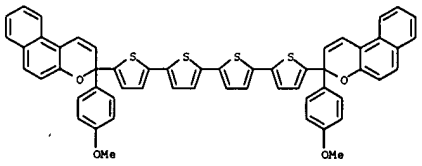
L10 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:623262 CAPLUS
DOCUMENT NUMBER: 138:31310
TITLE: Photochromic oligothiophene substituted chromenes. A new approach towards a molecular switch. Electrical characterization
AUTHOR(S): Yassar, A.; Jaafari, H.; Rebiere-Galy, N.; Frigoli, M.; Moustrou, C.; Samat, A.; Guglielmetti, R.
CORPORATE SOURCE: ITODYS, Paris, 75005, Fr.
SOURCE: European Physical Journal: Applied Physics (2002), 18(1), 3-8
CODEN: EPAPFV; ISSN: 1286-0042
PUBLISHER: EDP Sciences
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We present a new approach for the realization of a mol. photo-switch, based on photochrochromic oligothiophene-substituted chromenes. When optically excited, these compds. undergo a structural change passing from a neutral state (closed form) to a strongly polarized one (open form). This photochromic process is accompanied by a deep changes in the elec. characterization.
IT **402491-87-6**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(elec. characterization of photochromic oligothiophene substituted chromenes in mol. photo-switches)
RN 402491-87-6 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2':5',2'':5'',2'''-quaterthiophene]-5,5'''-diylbis[3-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



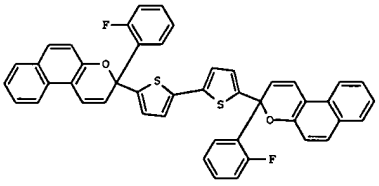
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:415365 CAPLUS
DOCUMENT NUMBER: 137:192685
TITLE: Light-triggered molecular devices based on photochromic oligothiophene substituted chromenes
AUTHOR(S): Yassar, A.; Garnier, F.; Jaafari, H.; Rebiere-Galy, N.; Frigoli, M.; Moustrou, C.; Samat, A.; Guglielmetti, R.
CORPORATE SOURCE: ITODYS, Paris, F-75005, Fr.
SOURCE: Applied Physics Letters (2002), 80(23), 4297-4299
CODEN: APPLAB; ISSN: 0003-6951
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An original concept for the realization of a mol. photoswitch is proposed, based on photochromic oligothiophene-substituted chromenes. When optically excited, these compds. undergo a structural change passing from a neutral state (closed form) to a strongly polarized one (open form). This photochromism process is also accompanied by a large increase in the elec. conductivity
IT **402491-87-6**
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(reference compound; mol. photoswitch based on photochromic oligothiophene substituted chromenes)
RN 402491-87-6 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2':5',2'':5'',2'''-quaterthiophene]-5,5'''-diylbis[3-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

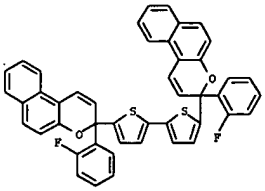
L10 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:96168 CAPLUS
DOCUMENT NUMBER: 136:270346
TITLE: A smart photochromophore through synergistic coupling of photochromic subunits
AUTHOR(S): Zhao, Weili; Carreira, Erick M.
CORPORATE SOURCE: Laboratorium fuer Organische Chemie, ETH-Zuerich, Zurich, CH-8093, Switz.
SOURCE: Journal of the American Chemical Society (2002), 124(8), 1582-1583
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



I

AB A novel bis-naphthopyran (I) was developed in which the individual photochromophores are electronically coupled to form a dimeric system generating one or two colored forms. The compound's optical properties are unique, differing significantly from a simple first-order superimposition of the monomeric constituents. Such a photochromophore has great promise for the development of smart optical devices. Characterization data for I and tabulation of absorption and fade results are available at http://pubs.acs.organic
IT **405151-03-3**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(photochromism of bis-naphthopyran generating one or two colored forms)
RN 405151-03-3 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2'-bithiophene]-5,5'-diylbis[3-(2-fluorophenyl)- (9CI) (CA INDEX NAME)

L10 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

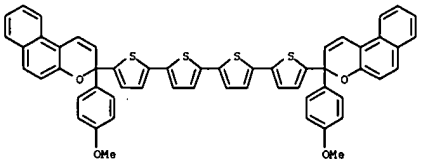
L10 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:853861 CAPLUS
DOCUMENT NUMBER: 136:224077
TITLE: Molecular switch devices realized by photochromic oligothiophenes
AUTHOR(S): Yassar, A.; Rebiere-Galy, N.; Frigoli, M.; Moustrou, C.; Samat, A.; Guglielmetti, R.; Jaafari, A.
CORPORATE SOURCE: ITODYS, Universite Paris 7, URA CNRS 34, Paris, F-75251, Fr.
SOURCE: Synthetic Metals (2001), 124(1), 23-27
CODEN: SYMEDZ; ISSN: 0379-6779
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The authors describe a new chromene bearing at their three position terthiophene and quaterthiophene. These chromene-substituted oligothiophenes have been prepared by palladium-catalyzed coupling reaction. When optically excited, these mols. undergo a structural change passing from a neutral state (closed form) to a strongly polarized one (open form). This photochromic process is also accompanied by a large increase in the elec. conductivity

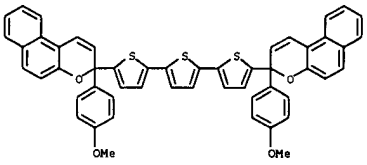
IT **402491-87-6P 402491-88-7P**
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(photochem. and photochromic properties of chromene-substituted oligothiophenes and photoelec. mol. switch based on these compds.)

RN 402491-87-6 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2':5',2'':5'',2'''-quaterthiophene]-5,5'''-diylbis[3-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



RN 402491-88-7 CAPLUS
CN 3H-Naphtho[2,1-b]pyran, 3,3'-[2,2':5',2''-terthiophene]-5,5''-diylbis[3-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)

L10 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN (Continued)



REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

10695062

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ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF
LOGOFF? (Y)/N/HOLD:y
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    25.15     513.22

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                    -3.65      -3.65

STN INTERNATIONAL LOGOFF AT 10:10:13 ON 17 APR 2005
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